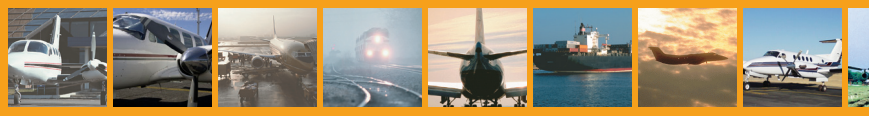
Australian Government
Australian Transport Safety Bureau

The Australian



Chief Commissioner's message

In the last issue, I invited readers to provide their feedback and suggestions on how the Australian Transport Safety Bureau could best respond to the Statement of Expectations provided by the Minister for Infrastructure, Transport, Regional Development and Local Government. Our response, the Statement of Intent, has been completed, and is now available on the ATSB website. It provides a useful explanation of our mission and goals.

I would like to thank all those members of the aviation community who provided feedback, sharing their concerns and ideas about aviation safety, and their thoughts and expectations regarding the ATSB. The level of input from the public proved extremely useful to us when composing the Statement of Intent, and I encourage you to continue providing feedback to us. Your perspective and insight are invaluable.

In addition, the ATSB has recently signed a Memorandum of Understanding (MoU) with CASA, which you will be able to find on the ATSB website. This MoU serves to outline and clarify the relationship between our two organisations, and we anticipate that our separate but complementary roles will make a great deal of difference in aviation safety in Australia, through cooperation, collaboration and the sharing of information.

Finally, I am pleased to report that the ATSB is continuing to augment its pool of expertise. Inevitably, as members of our organisation retire or leave for new challenges, we need to replace them. Recently, the Bureau has welcomed an Investigator with experience as an Air Traffic Controller, as well as two new Licensed Aircraft Maintenance Engineers, and two new Human Factors Investigators. If you are interested in joining the ATSB, you can view our current vacancies at the employment page of the ATSB website.

Martin Dolan
Chief Commissioner

Avoidable accidents: Low-level flying

The ATSB has published the first report in an educational series on avoidable accidents. This report focused on accidents involving unnecessary and unauthorised low-level flying; that is, flying lower than 1,000 ft (for a populous area) or 500 ft (for any other area) above ground level without approval from the Civil Aviation Safety Authority (CASA). Recognising that there are obstacles to avoid and a lower margin of error when flying low, CASA requires pilots to have special training and endorsements before they can legally conduct low-level flying. In the accidents described in the report, most of the pilots had neither of these.

Seven accidents investigated by the ATSB are documented. Of those seven accidents, six were fatal. They were chosen by aviation safety investigators to highlight the inherent dangers of low flying and to offer some lessons learnt from each case. Three accidents involved 'buzzing', two accidents occurred during sight-seeing tours, and two occurred en-route to family celebrations. The tragic thing about those accidents is that they were all avoidable.

All aircraft impacted the ground or water after either striking powerlines below 500 ft (five accidents) or losing control of the aircraft at low height. It is important to keep in mind that powerlines are difficult to see, exist in remote places where you least expect them, and research by the ATSB has shown that 63 per cent of pilots knew the location of the powerline they struck. In addition, low-level flying presents fewer opportunities to recover from a loss of control compared to flight at higher altitudes. The closer you are to the ground, the less time and distance you have to regain control. Low-level flying is inherently dangerous and should be avoided when there is no operational reason to fly low.

This short report has been designed as an educational brochure for both learning and experienced general aviation pilots. It is hoped that these lessons learnt will help pilots make more accurate risk assessments and more informed decisions before flying close to the ground. ■

Aviation Safety Investigator

V-belt failure contributes to helicopter accident

On 25 September 2007 at about 0600 WST, a Robinson Helicopter Company R22 Beta II helicopter, registered VH-HCN, departed under the visual flight rules from Doongan Station in the Kimberley region of Western Australia. The purpose of the flight was to conduct a stock survey in the vicinity of the station. On board the helicopter were the pilot and one passenger.

About 5 to 10 minutes into the flight, the passenger detected a rubber-like burning smell, combined with a smell he associated with hot metal. The passenger informed the pilot who immediately landed the helicopter in a clear area adjacent to a nearby road. The pilot visually inspected the helicopter with the engine and rotor turning, and remarked that one of the rotor system drive belts appeared to be damaged, though he assessed that the helicopter was capable of conducting the short return flight to Doongan Station. The pilot decided to return the helicopter to the station, while the passenger elected to remain at the landing site and await recovery by motor vehicle.

The passenger watched the helicopter take off and, owing to the calm conditions, continued to hear the engine noise of the helicopter for some time. The passenger reported hearing variation in the engine noise before it ceased abruptly. In response, the passenger began walking along the road in the direction of the station and discovered the wreckage of the helicopter adjacent to the road. The helicopter had been destroyed by impact forces and fire and the pilot had been fatally injured.

The investigation determined that the helicopter's main rotor system drive belts probably failed or were dislodged, resulting in a loss of drive to the rotor system that necessitated an autorotative landing over inhospitable terrain. The

helicopter manufacturer's maintenance documentation advised that a burning rubber smell may be indicative of impending V-belt failure as a result of belt or actuator bearing damage. Examination of the clutch actuator and sprag clutch bearings found no evidence of damage that would account for the reported smell. Therefore, V-belt damage was isolated as the likely source of the burning smell. That was consistent with the findings from a number of other Australian V-belt failure or dislodgement events. The pilot's decision to return the helicopter to the station without shutting down to visually inspect the V-belts probably contributed to the development of the accident. The investigation also identified a number of safety factors relating to unsafe decision making. During the flight immediately preceding the accident flight, operation of the helicopter outside of the centre of gravity limits, and at a gross weight that exceeded the maximum allowable for the helicopter, increased the risk of controllability issues, component fatigue and V-belt damage.

In addition, there was evidence of the recent use of cannabis by the pilot, which would have increased the risk of impaired motor skills and reduced cognitive capacity; in particular, in response to in-flight problems, such as an engine or rotor system drive failure.

As a result of this accident, and a number of other similar events that were identified during this investigation, the ATSB has commenced a Safety Issue investigation to determine if there are any design, manufacture, maintenance or operational issues that increase the risk of a failure of the rotor system drive belt in the R22 helicopter.

V-belt failure or dislodgement was identified as a factor in a number of overseas and Australian R22 accidents. In response, the Civil Aviation Safety Authority issued airworthiness bulletin, AWB 63-006 *Issues related to the Robinson Helicopter Corporation (RHC) R22 main rotor drive system.* ■

ATSB investigation report AO-2007-046, released on 22 December 2009, is avaliable on the website.

Investigation briefs

Wake turbulence buffets aircraft

ATSB Investigation AO-2008-077

On 3 November 2008, a SAAB Aircraft Company 340B-229, registered VH-ORX, was conducting a regular public transport flight from Orange, NSW to Sydney. At about 0724 AEST, when tracking to join a 7 NM final for runway 34R and descending through an altitude of about 2,400 ft above mean sea level, the aircraft experienced an uncommanded 52° roll to the left, in conjunction with an 8° nose-down pitching motion. Immediately after, the aircraft rolled through wings level to a 21° right bank angle. The aircraft also experienced an altitude loss of 300 to 400 ft. The aircraft was about 259 m to the right of the 34R centreline.

As a result of exceeding its operational parameters, the Command Cutout feature ceased giving steering commands to the autopilot. The crew disengaged the autopilot, regained control and manually flew the remainder of the approach. A passenger sustained minor injuries.

Examination of the available radar, meteorological and aircraft operational data identified that the upset probably resulted from wake turbulence, generated by an Airbus Industrie A380-800 (A380) that was conducting a parallel approach to runway 34L. There was a 35 kt left crosswind affecting both aircraft's approaches.

Airservices Australia (Airservices) reported that, as a result of this incident, they had introduced a number of interim minor changes to Sydney parallel runway operational procedures. Those minor changes would have effect while Airservices carried out a review of A380 operations. In addition, CASA has opened a regulatory change project to review and update wake turbulence separation information in the Manual of Standards Part 172. ■

Incorrect data entry leads to tailstrike

ATSB Investigation AO-2009-012 Interim

On 20 March 2009, at 2230 AEDST, an Airbus A340-541 aircraft, registered A6-ERG, commenced the take-off roll at Melbourne Airport, Vic. on a passenger flight to Dubai, United Arab Emirates.

During the reduced thrust takeoff, the aircraft's tail made contact with the runway surface, but the aircraft did not climb. The captain commanded and selected take-off and go-around engine thrust and the aircraft commenced a climb. After jettisoning fuel to reduce the landing weight, the flight crew returned the aircraft to Melbourne for landing.

The investigation has identified that the pre-flight take-off performance calculations were based on an incorrect take-off weight that was inadvertently entered into the take-off performance software on a laptop computer used by the flight crew. Subsequent crosschecks did not detect the incorrect entry and its effect on aircraft performance.

As a result of this accident, the aircraft operator has undertaken a number of initiatives across its operations with a view to minimising the risk of a recurrence. In addition, the aircraft manufacturer has released a modified version of its performance planning tool and is developing a software package that automatically checks the consistency of the flight data being entered into the aircraft's flight computers by flight crews.

The investigation has found a number of similar take-off performance-related incidents and accidents around the world. As a result, the ATSB has initiated a safety research project to examine those events. The ATSB has drawn the interim report to the attention of relevant Australian operators to highlight the risks when calculating and checking take-off performance information. The investigation is continuing. ■

Microburst event

ATSB Investigation AO-2007-001

On 15 April 2007, a Boeing Company 747-438 aircraft, registered VH-OJR, was being operated on a scheduled passenger flight from Singapore to Sydney, NSW. On board the aircraft were 19 crew and 355 passengers. At 1923 EST, the aircraft was about 100 ft above ground level prior to landing on runway 16 Right (16R) when it encountered a significant and rapid change in wind conditions. The aircraft touched down heavily and the crew received a windshear warning in the cockpit. The crew conducted the windshear escape manoeuvre and returned for a normal landing.

Investigation revealed that the airport was under the influence of a line of high-based thunderstorms. Outflow descending from one of the storm cells led to the formation of a dry microburst that resulted in rapidly changing surface wind conditions. Moderate windshear had been reported by aircraft operating on the reciprocal runway. However, ATC had not effectively communicated the wind information to the occurrence aircraft. The airport did not have an automatic windshear warning system and the windshear warning system fitted to the aircraft was reactive and not predictive.

As a result of this occurrence, the Bureau of Meteorology commenced a Sydney Airport Wind Shear Study to assess options for providing the aviation industry with low altitude windshear alerts. That study is scheduled for completion in April 2010.

The ATSB database includes 194 reported occurrences of high capacity aircraft encountering windshear during the approach or take-off phases of flight at Australian capital city airports between 1 July 1998 and 30 June 2008. ■

Engine failure

ATSB Investigation AO-2007-008

On 24 May 2007, at about 1530 WST, a Raytheon Beechcraft B200 King Air aircraft, registered VH-IWO, was cruising at flight level 290 on an aero-medical flight from Newman to Fitzroy Crossing, WA. On board the aircraft were the pilot, a doctor and a flight nurse. Approximately 259 km south-south-east of Broome, the aircraft's right engine inter-turbine temperature indication (ITT) increased without any engine control input by the pilot. The ITT rise was accompanied by a slight fluctuation in the right engine's torque, fuel flow, ITT and N1 indications. In response, the pilot reduced power on the engine, and the ITT appeared to return to within the normal operating range, although the fluctuations persisted. Shortly after the power reduction, there was a slight right engine surge with an accompanying rise in ITT, and a wisp of smoke was observed coming from the right engine.

The pilot shut down the right engine and decided to divert to Broome Airport. He also contacted his operations centre to ensure the availability of appropriate support at Broome. The pilot shut down and secured the right engine, briefed the passengers on the situation and they prepared for landing. The remainder of the flight and subsequent single-engine landing was uneventful.

The operator's maintenance personnel examined the aircraft and engine at Broome and found that they were unable to rotate the right engine compressor. The engine was removed and sent to the engine manufacturer's authorised overhaul facility for examination under ATSB supervision. It was determined that there had been a major internal failure of the right engine. Examination revealed extensive damage caused by the separation of one of the compressor turbine blades at mid span.

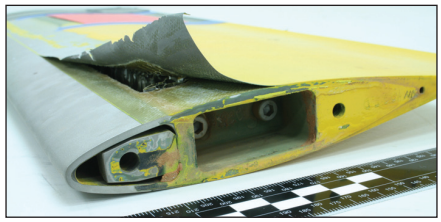
As a result of this occurrence, the engine manufacturer has modified the alerting feature in the case of the interruption of the supply of electronic trend monitoring (ECTM) information to customers from its automated ECTM program. ■

Skin peels away from main rotor blade

ATSB Investigation AO-2009-002

While conducting a survey flight at Ambalindum Station (approximately 135 km north-east of Alice Springs, NT), the pilot of a Robinson R22 Beta helicopter, registered VH-HZB, noticed severe vibration of the main rotor assembly and cyclic controls. The pilot landed the helicopter immediately, and a subsequent inspection revealed that a length of aerofoil skin had peeled back from the leading edge on the underside of one of the main rotor blades.

The main rotor blades were subsequently removed from the helicopter and the tips sent to the ATSB's Canberra laboratories for examination. Initial inspection revealed extensive erosion of the paint on the leading edge, and debonding of the stainless steel skin along the bond line on the underside of one of the main rotor blades. The debonding was considered to have been influenced by the extensive surface erosion observed.



A review of the current information surrounding Robinson helicopter blade debonds found a number of previous incidents involving a similar failure mechanism. Additionally, the issue of main rotor debond had been addressed by a number of airworthiness directives (ADs) issued by the Civil Aviation Safety Authority (CASA) and the Federal Aviation Authority, along with a number of safety alerts and service letters issued by the manufacturer.

The investigation also found no evidence to suggest that the actions contained within the current CASA Airworthiness Directive addressing blade debonding issues (AD/R22/54) had been integrated into the helicopter's maintenance routine. The logbooks and maintenance release documents for the helicopter have since been updated to include reference to AD/R22/54 Amdt 3. ■

Rotor blade injury

ATSB Investigation AO-2009-010

On 2 April 2009, a flight instructor and a student pilot were conducting normal circuit and autorotation training at Proserpine/Whitsunday Coast Airport, Qld. At 1400 EST the helicopter collided with terrain on the grass at the side of the departure end of runway 11, impacting with a high rate of descent and significant forward speed. The helicopter was seriously damaged and the instructor was seriously injured.

The instructor received a laceration of the rear section of the scalp, with exposure of the skull, requiring about 60 stitches. The injury was consistent with the instructor being struck by a rotating main rotor blade during the accident sequence. That was supported by the instructor's headset cable being found wound around the main rotor mast and hub.

Afterwards, neither pilot could recall any of the flight sequence immediately before the impact. There were no witnesses to the accident and no relevant recorded data. An examination of the helicopter wreckage indicated that there were no pre-impact defects. Both main rotor blades were still attached to the main rotor mast, with no evidence of delamination or coning.

The R22 Pilot Operating Handbook stated that door-off operation was approved with doors removed. The helicopter was found with the left cabin door removed. The pilots were not wearing safety helmets, and were not required to do so. The helicopter was about 11 kg over its gross weight limit during takeoff and in the initial part of the flight, increasing the risk of structural fatigue, underperformance, and control instability. While the effect of overweight operations may not be immediately apparent, the cumulative effect of such operations can, over time, be catastrophic. Due to a lack of information, the investigation was unable to determine why the helicopter collided with terrain. The investigation found, however, that the use of safety helmets would reduce the risk of pilot injury during door(s)-off operations. ■

REPCON briefs

Australia's voluntary confidential aviation reporting scheme

REPCON allows any person who has an aviation safety concern to report it to the ATSB confidentially. Unless permission is provided by the person that personal information is about (either the reporter or any person referred to in the report) that information will remain confidential.

The desired outcomes of the scheme are to increase awareness of safety issues and to encourage safety action by those who are best placed to respond to safety concerns raised by reporters.

Before submitting a REPCON report take a little time to consider whether you have other available and potentially suitable options to report your safety concern. In some cases, your own organisation may have a confidential reporting system that can assist you with assessing your safety concern and taking relevant timely safety action. You may also wish to consider reporting directly to the Civil Aviation Safety Authority (CASA) if you are concerned about deliberate breaches of the safety regulations, particularly those that have the potential to pose a serious and imminent risk to life or health. REPCON staff may be able to assist you in making these decisions, so please don't hesitate to contact our staff to discuss your options.

REPCON would like to hear from you if you have experienced a 'close call' and think others may benefit from the lessons you have learnt. These reports can serve as a powerful reminder that, despite the best of intentions, well-trained and well-meaning people are still capable of making mistakes. The stories arising from these reports may serve to reinforce the message that we must remain vigilant to ensure the ongoing safety of ourselves and others.

Control of Licensed Aircraft Maintenance Engineer licenses

R200900017

Report narrative:

The reporter expressed safety concerns that although the operator was physically checking all LAME (Licensed Aircraft Maintenance Engineer) licenses, those checking them were having difficulties in verifying the licences as valid and authentic.

Action taken by REPCON:

REPCON supplied CASA with the de-identified report and a version of the operator's response. CASA advised that it had reviewed the report, and noted that the operator had indicated it had carried out an in-depth review of all licensed engineers, along with aircraft maintenance engineers not yet licensed. All of the records were verified by CASA and only very minor, insignificant discrepancies were found. CASA reported that it will not be pursuing this matter further.

The use of electronic devices during descent

R200900060

Report narrative:

The reporter expressed safety concerns that a passenger continued to use a portable electronic device (i-phone) even after an announcement over the cabin Passenger Address (PA) system that required all electronic devices to be switched off. The reporter approached a cabin crew member to inform them of the situation. The cabin crew approached the user of the i-phone, but the user was observed to continue to use the i-phone while the aircraft conducted

an Instrument Landing System (ILS) approach at night in Instrument Meteorological Conditions (IMC) and during the landing.

Reporter comment: The cabin crew should have monitored the passenger more closely and, if necessary, should have removed the i-phone for the remainder of the flight.

Action taken by REPCON:

REPCON supplied the operator with the de-identified report and the operator advised that it had reviewed its procedures for the monitoring of portable electronic device use during all phases of flight. The review identified that the existing procedures provide adequate measures for confirming portable electronic devices are switched off during applicable stages of flight. In addition, the system for reporting passengers who fail to follow crew instructions has been reviewed. The operator is satisfied with the integrity of these procedures. Notwithstanding, a reminder has been sent to all cabin crew reaffirming the existing procedures.

REPCON supplied CASA with the de-identified report and a version of the operator's response. CASA provided the following response:

> CASA has reviewed the Report and is satisfied with the operator's response. The operator investigated the matter with a review of existing procedures and has further demonstrated their commitment to a positive safety culture within the organisation in reaffirming these procedures with cabin crew.

Restroom visits

R200900090

Report narrative:

The reporter expressed safety concerns about flight deck procedures for the Airbus A320 aircraft with two flight crew, when a restroom visit is required. The reporter was very concerned that during restroom visits, one flight crew member was alone on the flight deck with the access door locked.

Action taken by REPCON:

REPCON supplied CASA with the de-identified report and CASA provided the following response:

> All operators of the Airbus A320 aircraft have approved procedures to handle situations such as restroom visits for the flight crew. Procedures include monitoring the status in the flight deck and access in an emergency.

Airport Landing Area (ALA) procedures

R200900093

Report narrative:

The reporter expressed safety concerns that some aircraft operating at an Airport Landing Area (ALA) in Western Australia were only making radio calls on the Melbourne Centre frequency (120.3), whereas the reporter believes calls should also be made on the ALA frequency and a local aerodrome frequency in accordance with the Aeronautical Information Publication (AIP).

Reporter comment: The ALA is within a busy training area and there is a high volume of traffic in the area of the ALA, and effective communication is vital for the safety of those aircraft operating at the ALA and in the vicinity of the ALA.

Action taken by REPCON:

REPCON supplied CASA with the de-identified report and CASA provided the following response:

> CASA has reviewed the issues raised in the Report but can find no evidence of aviation operators at the [name] Airport Landing Area (ALA) making radio calls on inappropriate frequencies.

REPCON reports received	
Total 2007	117
Total 2008	121
Total 2009	117
Total 2010[a]	11
What happens to my report?	
Information briefs and alert bulletins issued	
Total 2007	58
Total 2008	99
Total 2009	121
Total 2010[a]	2
Who is reporting to REPCON?[b]	
Aircraft maintenance personnel	25%
Air Traffic controller	4%
Cabin crew	3%
Facilities maintenance personnel /ground crew	1%
Flight crew	36%
Passengers	6%
Others[c]	25%

a. as of 19 January 2010
b. 29 January 2007 to 31 December 2009
c. examples include residents, property owners, general public

What is not a reportable safety concern?

To avoid doubt, the following matters are not reportable safety concerns and are not guaranteed confidentiality:

(a) matters showing a serious and imminent threat to a person's health or life;

(b) acts of unlawful interference with an aircraft;

(c) industrial relations matters;

(d) conduct that may constitute a serious crime.

Note 1: REPCON is not an alternative to complying with reporting obligations under the Transport Safety Investigation Regulations 2003 (see <www.atsb.gov.au>).

Note 2: Submission of a report known by the reporter to be false or misleading is an offence under section 137.1 of the Criminal Code.

How can I report to REPCON?

Reporters can submit a REPCON report online via the ATSB website. Reporters can also submit via a dedicated REPCON telephone number: 1800 020 505;

by email: repcon@atsb.gov.au;
by facsimile: 02 6274 6461 or by mail:
Freepost 600, PO Box 600,
Civic Square ACT 2608.

How do I get further information on REPCON?

If you wish to obtain advice or further information on REPCON, please visit the ATSB website at <www.atsb.gov.au> or call REPCON on 1800 020 505.